

$\Sigma(1560)$ Bumps $I(J^P) = 1(?)$ Status: **

OMITTED FROM SUMMARY TABLE

This entry lists peaks reported in mass spectra around 1560 MeV without implying that they are necessarily related.

DIONISI 78B observes a 6 standard-deviation enhancement at 1553 MeV in the charged $\Lambda/\Sigma\pi$ mass spectra from $K^- p \rightarrow (\Lambda/\Sigma)\pi K\bar{K}$ at 4.2 GeV/c. In a CERN ISR experiment, LOCKMAN 78 reports a narrow 6 standard-deviation enhancement at 1572 MeV in $\Lambda\pi^\pm$ from the reaction $p p \rightarrow \Lambda\pi^+\pi^- X$. These enhancements are unlikely to be associated with the $\Sigma(1580)$ (which has not been confirmed by several recent experiments – see the next entry in the Listings).

CARRROLL 76 observes a bump at 1550 MeV (as well as one at 1580 MeV) in the isospin-1 $\bar{K}N$ total cross section, but uncertainties in cross section measurements outside the mass range of the experiment preclude estimating its significance.

See also MEADOWS 80 for a review of this state.

$\Sigma(1560)$ MASS (PRODUCTION EXPERIMENTS)					
VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
≈ 1560 OUR ESTIMATE					
1553±7	121	DIONISI	78B	HBC	\pm $K^- p \rightarrow (\Lambda/\Sigma)\pi K\bar{K}$
1572±4	40	LOCKMAN	78	SPEC	\pm $p p \rightarrow \Lambda\pi^+\pi^- X$

NODE=B080M

NODE=B080M
→ UNCHECKED ←

$\Sigma(1560)$ WIDTH (PRODUCTION EXPERIMENTS)					
VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
79±30	121	DIONISI	78B	HBC	\pm $K^- p \rightarrow (\Lambda/\Sigma)\pi K\bar{K}$
15±6	40	¹ LOCKMAN	78	SPEC	\pm $p p \rightarrow \Lambda\pi^+\pi^- X$

NODE=B080W

NODE=B080W

NODE=B080215;NODE=B080

$\Sigma(1560)$ DECAY MODES (PRODUCTION EXPERIMENTS)					
Mode	Fraction (Γ_i/Γ)				
$\Gamma_1 \Lambda\pi$	seen				
$\Gamma_2 \Sigma\pi$					

DESIG=1

DESIG=2

NODE=B080220

$\Sigma(1560)$ BRANCHING RATIOS (PRODUCTION EXPERIMENTS)					
$\Gamma(\Sigma\pi)/[\Gamma(\Lambda\pi) + \Gamma(\Sigma\pi)]$	DOCUMENT ID	TECN	CHG	COMMENT	$\Gamma_2/(\Gamma_1+\Gamma_2)$
0.35±0.12	DIONISI	78B	HBC	\pm	$K^- p \rightarrow (\Lambda/\Sigma)\pi K\bar{K}$
$\Gamma(\Lambda\pi)/\Gamma_{\text{total}}$					
seen	LOCKMAN	78	SPEC	\pm	$p p \rightarrow \Lambda\pi^+\pi^- X$

NODE=B080R1
NODE=B080R1NODE=B080R2
NODE=B080R2

NODE=B080

NODE=B080;LINKAGE=A

¹ The width observed by LOCKMAN 78 is consistent with experimental resolution.

**$\Sigma(1560)$ REFERENCES
(PRODUCTION EXPERIMENTS)**

NODE=B080

MEADOWS	80	Toronto Conf.	283	B.T. Meadows	(CINC)	REFID=32077
DIONISI	78B	PL	78B 154	C. Dionisi, R. Armenteros, J. Diaz	(CERN, AMST+) I	REFID=32051
LOCKMAN	78	Saclay DPHPE	78-01	W. Lockman <i>et al.</i>	(UCLA, SACL)	REFID=32075
CARROLL	76	PRL	37 806	A.S. Carroll <i>et al.</i>	(BNL) I	REFID=31760
